Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1. (Previously Presented) A method for improving channel efficiency in a communication system that complies with a Data Over Cable Service Interface Specification (DOCSIS) standard, comprising:

establishing one or more proprietary logical channels for communication between a first device that supports at least one proprietary communication parameter and other devices that support said at least one proprietary communication parameter;

receiving registration information from a second device, wherein said registration information indicates that said second device supports said at least one proprietary communication parameter; and

determining if said second device may be assigned to one of said one or more proprietary logical channels based on said registration information,

if said second device may be assigned to said one of said one or more proprietary logical channels, assigning said second device to said one of said one or more proprietary logical channels,

else creating a new proprietary logical channel when a predetermined number of the other devices support said at least one proprietary communication parameter, and

assigning said second device to said new proprietary logical channel when said second device cannot be assigned to said one of said one or more proprietary logical channels.

2. (Original) The method of claim 1, wherein said first device comprises a cable modem termination system (CMTS) and said second device comprises a cable modem.

3. (Original) The method of claim 1, wherein said at least one proprietary communication parameter comprises a modulation rate.

4. (Original) The method of claim 1, wherein said at least one proprietary communication parameter comprises a base rate.

5. (Original) The method of claim 1, wherein said at least one proprietary communication parameter comprises an alpha value.

6. (Previously Presented) The method of claim 1, wherein said establishing one or more proprietary logical channels comprises generating an Upstream Channel Descriptor (UCD) message, wherein said UCD message includes said at least one proprietary communication parameter.

7. (Previously Presented) The method of claim 6, wherein said generating a UCD message comprises generating a UCD message having a version field or a type field that comprises a value not provided for by said DOCSIS standard.

8. (Previously Presented) The method of claim 6, wherein said establishing one or more proprietary logical channels further comprises sending said UCD message only to devices that support said at least one proprietary communication parameter.

9. (Original) The method of claim 8, wherein said sending said UCD message only to devices that support said at least one proprietary communication parameter comprises:

accessing a database of identifiers of devices that support said at least one proprietary communication parameter; and

generating a unicast UCD message addressed to each of said devices having an identifier in said database.

10. (Original) The method of claim 8, wherein said sending said UCD message only to devices that support said at least one proprietary communication parameter comprises:

accessing an identifier that identifies a plurality of devices that support said at least one proprietary communication parameter; and

generating a multicast UCD message addressed to said plurality devices identified by said identifier.

11. (Original) The method of claim 1, wherein said receiving said registration information from a second device comprises:

sending a first unicast message to said second device to determine if said second device implements any proprietary features;

receiving a message from said second device, wherein said message indicates support by said second device for said at least one proprietary communication parameter; and

sending a second unicast message to said second device, wherein said second unicast message indicates support by said first device for said at least one proprietary communication parameter.

12. (Original) The method of claim 1, wherein said assigning said second device to said logical channel comprises generating a unicast message to said second device identifying said logical channel.

13. (Previously Presented) A cable modem termination system (CMTS) for improving channel efficiency in a cable modem system that complies with a Data Over Cable Service Interface Specification (DOCSIS) standard, comprising:

an upstream channel manager adapted to establish one or more proprietary logical channels for communication with cable modems that support at least one proprietary communication parameter; and

a registration module adapted to receive registration information from a cable modem, wherein said registration information indicates that said cable modem supports said at least one proprietary communication parameter, to determine whether one of said one or more proprietary logical channels may be assigned to said cable modem, and to assign said cable modem to said one or more proprietary logical channels if said cable modem may be assigned to said one of said one or more proprietary logical channels,

else to create a new proprietary logical channel when a predetermined number of the other devices support said at least one proprietary communication parameter and to assign said second device to the new proprietary logical channel when said second device cannot be assigned to one of said one or more proprietary logical channels.

14. (Original) The CMTS of claim 13, wherein said at least one proprietary communication parameter comprises a modulation rate.

15. (Original) The CMTS of claim 13, wherein said at least one proprietary communication parameter comprises a base rate.

16. (Original) The CMTS of claim 13, wherein said at least one proprietary communication parameter comprises an alpha value.

17. (Previously Presented) The CMTS of claim 13, wherein said upstream channel manager is adapted to determine whether or not to establish said one or more proprietary logical channels.

18. (Original) The CMTS of claim 13, wherein said upstream channel manager is adapted to generate a UCD message that includes said at least one proprietary communication parameter.

19. (Previously Presented) The CMTS of claim 18, wherein said upstream channel manager is adapted to generate a UCD message having a version field or a type field that comprises a value not provided for by said DOCSIS standard.

20. (Original) The CMTS of claim 18, wherein said upstream channel manager is further adapted to send said UCD message only to cable modems that support said at least one proprietary communication parameter.

21. (Original) The CMTS of claim 20, wherein said upstream channel manager is adapted to access a database of identifiers of cable modems that support said at least one proprietary communication parameter, and to generate a unicast UCD message addressed to each of said cable modems having an identifier in said database.

22. (Original) The CMTS of claim 20, wherein said upstream channel manager is adapted to access an identifier that identifies a plurality of cable modems that support said at least one proprietary communication parameter, and to generate a multicast UCD message addressed to said plurality devices identified by said identifier.

23. (Original) The CMTS of claim 13, wherein said registration module is adapted to send a first unicast message to said cable modem to determine if said cable modem implements any proprietary features, to receive a message from said cable modem, wherein said message indicates that said cable modem supports said at least one proprietary communication parameter, and to send a second unicast message to said

cable modem, wherein said second unicast message indicates that said CMTS supports said at least one proprietary communication parameter.

24. (Original) The CMTS of claim 13, wherein said registration module is adapted to generate a unicast message to said cable modem identifying said logical channel.

25. (Currently Amended) ~~A computer program product comprising a~~ A computer useable medium having stored thereon, ~~computer program logic recorded thereon for enabling~~ computer executable instructions that, if executed by a processor, cause the processor to perform ~~to facilitate communication between devices in a communication system that complies with a Data Over Cable Service Interface Specification (DOCSIS) standard, said computer program logic~~ a method comprising:

~~means for enabling said processor to establish~~ establishing one or more proprietary logical channels for communication between a first device that implements at least one proprietary communication parameter associated with bandwidth utilization and other devices that support said at least one proprietary communication parameter;

~~means for enabling said processor to receive~~ receiving registration information from a second device, wherein said registration information indicates that said second device supports said at least one proprietary communication parameter;

~~means for enabling said processor to determine~~ determining if said second device may be assigned to one of said one or more proprietary logical channels based on said registration information;

~~means for enabling said processor to assign~~ assigning said second device to said one of said one or more proprietary logical channels if said second device may be assigned to said one of said one or more proprietary logical channels;

~~means for enabling said processor to create~~ creating a new proprietary logical channel when a predetermined number of the other devices support said at least one proprietary communication parameter; and

~~means for~~ assigning said second device to said new proprietary logical channel when said second device cannot be assigned to said one of said one or more proprietary logical channels.

26. (Original) The computer program product of claim 25, wherein said first device comprises a cable modem termination system (CMTS) and said second device comprises a cable modem.

27. (Original) The computer program product of claim 25, wherein said at least one proprietary communication parameter comprises a modulation rate.

28. (Original) The computer program product of claim 25, wherein said at least one proprietary communication parameter comprises a base rate.

29. (Original) The computer program product of claim 25, wherein said at least one proprietary communication parameter comprises an alpha value.

30. (Currently Amended) The computer program product of claim 25, wherein said ~~means for~~ step of ~~enabling said processor to establish~~ establishing one or more proprietary logical channels comprises:

~~means for enabling said processor to generate~~ generating an Upstream Channel Descriptor (UCD) message, wherein said UCD message includes said at least one proprietary communication parameter.

31. (Currently Amended) The computer program product of claim 30, wherein said ~~means for~~ step of ~~enabling said processor to generate~~ generating a UCD message comprises:

~~means for enabling said processor to generate~~ generating a UCD message having a version field or a type field that comprises a value not provided for by said DOCSIS standard.

32. (Currently Amended) The computer program product of claim 30, wherein said ~~means for~~ step of ~~enabling said processor to establish~~ establishing one or more proprietary logical channels further comprises:

~~means for enabling said processor to send~~ sending said UCD message only to devices that support said at least one proprietary communication parameter.

33. (Currently Amended) The computer program product of claim 32, wherein said ~~means for~~ step of ~~enabling said processor to send~~ sending said UCD message only to devices that support said at least one proprietary communication protocol comprises:

~~means for enabling said processor to access~~ accessing a database of identifiers of devices that support said at least one proprietary communication protocol; and

~~means for enabling said processor to generate~~ generating a unicast UCD message addressed to each of said devices having an identifier in said database.

34. (Currently Amended) The computer program product of claim 32, wherein said ~~means for~~ step of ~~enabling said processor to send~~ sending said UCD message only to devices that support said at least one proprietary communication parameter comprises:

~~means for enabling said processor to access~~ accessing an identifier that identifies a plurality of devices that support said at least one proprietary communication parameter; and

~~means for enabling said processor to generate~~ generating a multicast UCD message addressed to said plurality devices identified by said identifier.

35. (Currently Amended) The computer program product of claim 25, wherein said ~~means for~~ step of ~~enabling said processor to receive~~ receiving said registration information from a second device comprises:

~~means for enabling said processor to send~~ sending a first unicast message to said second device to determine if said second device implements any proprietary features;

~~means for enabling said processor to receive~~ receiving a message from said second device, wherein said message indicates support by said second device for said at least one proprietary communication parameter; and

~~means for enabling said processor to send~~ sending a second unicast message to said second device, wherein said second unicast message indicates support by said first device for said at least one proprietary communication parameter.

36. (Currently Amended) The computer program product of claim 25, wherein said ~~means for~~ step of ~~enabling said processor to assign~~ assigning said second device to said logical channel comprises:

~~means for enabling said processor to generate~~ generating a unicast message to said second device identifying said logical channel.